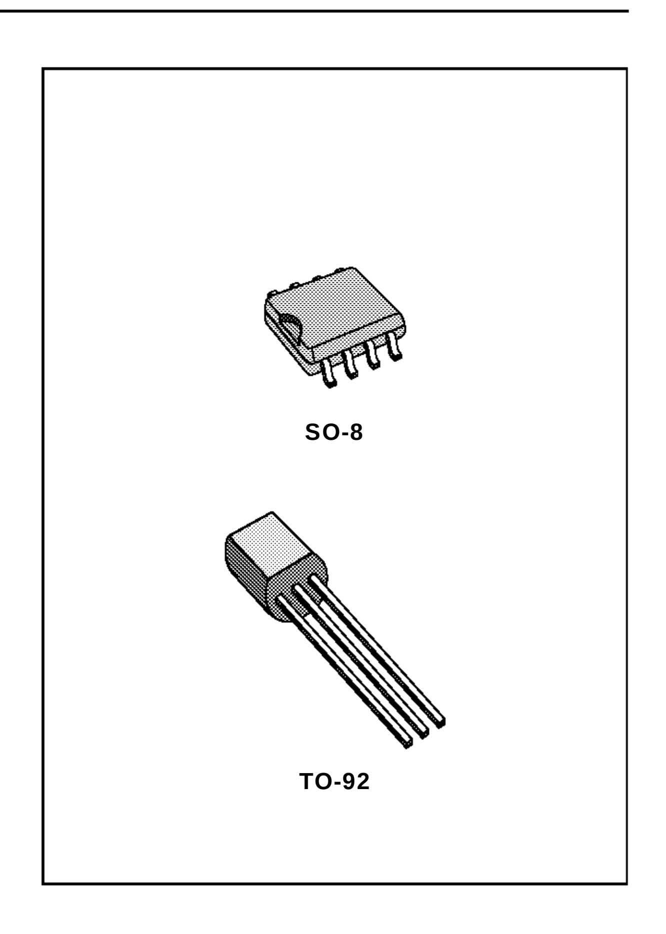
SGS-THOMSON
MICROELECTRONICS

L78L00 SERIES

POSITIVE VOLTAGE REGULATORS

- OUTPUT CURRENT UP TO 100 mA
- OUTPUT VOLTAGES OF 5; 6; 8; 9; 12; 15; 18; 24V
- THERMAL OVERLOAD PROTECTION
- SHORT CIRCUIT PROTECTION
- NO EXTERNAL COMPONENTS ARE REQUIRED
- AVAILABLE IN EITHER ± 5% (AC) OR ± 10% (C) SELECTION

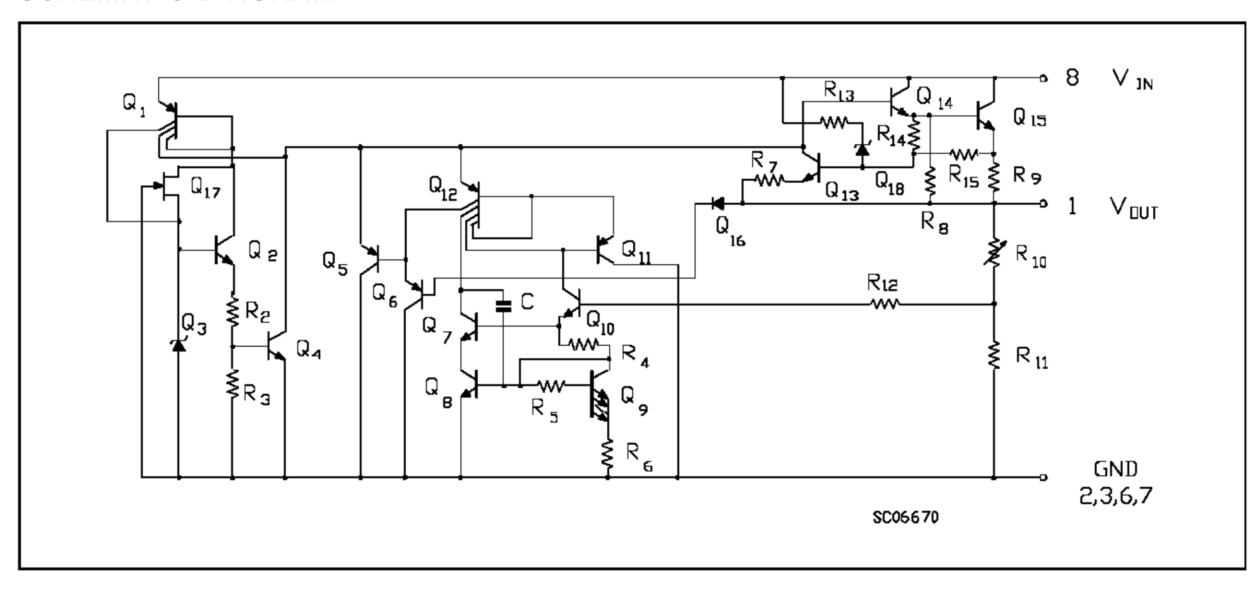


DESCRIPTION

The L78L00 series of three-terminal positive regulators employ internal current limiting and thermal shutdown, making them essentially indestructible. If adequate heatsink is provided, they can deliver up to 100 mA output current. They are intended as fixed voltage regulators in a wide range of applications including local or on-card regulation for elimination of noise and distribution problems associated with single-point regulation. In addition, they can be used with power pass elements to make high-current voltage regulators.

The L78L00 series used as Zener diode/resistor combination replacement, offers an effective output impedance improvement of typically two orders of magnetude, along with lower quiescent current and lower noise.

SCHEMATIC DIAGRAM

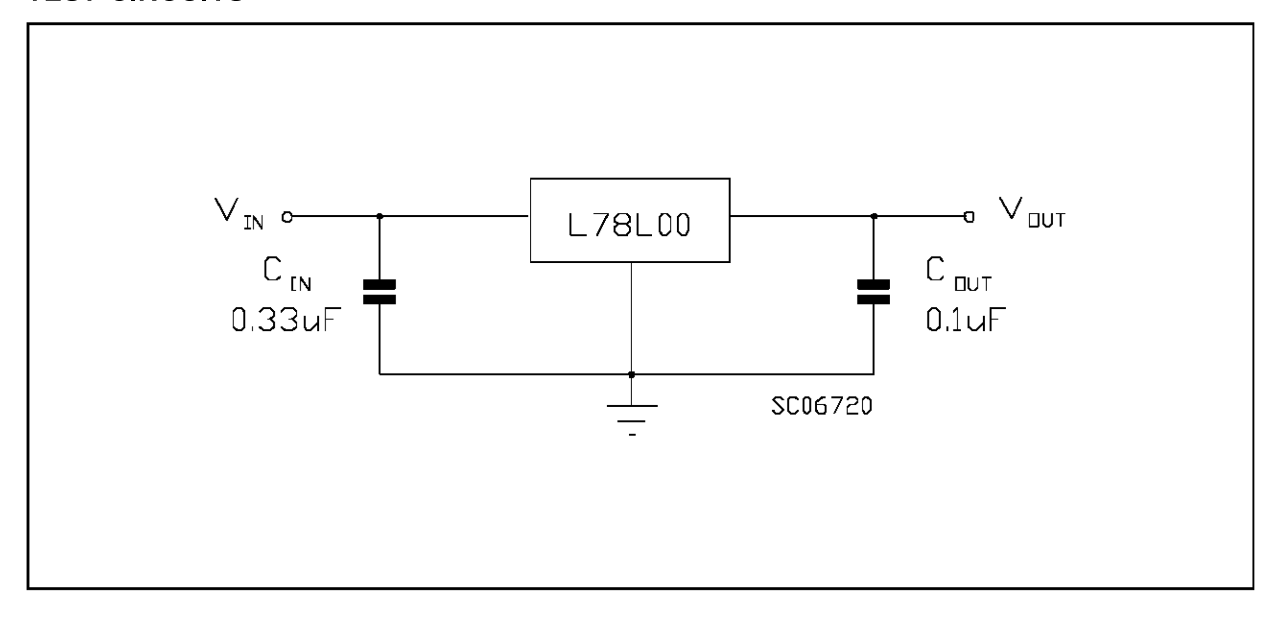


ABSOLUTE MAXIMUM RATING

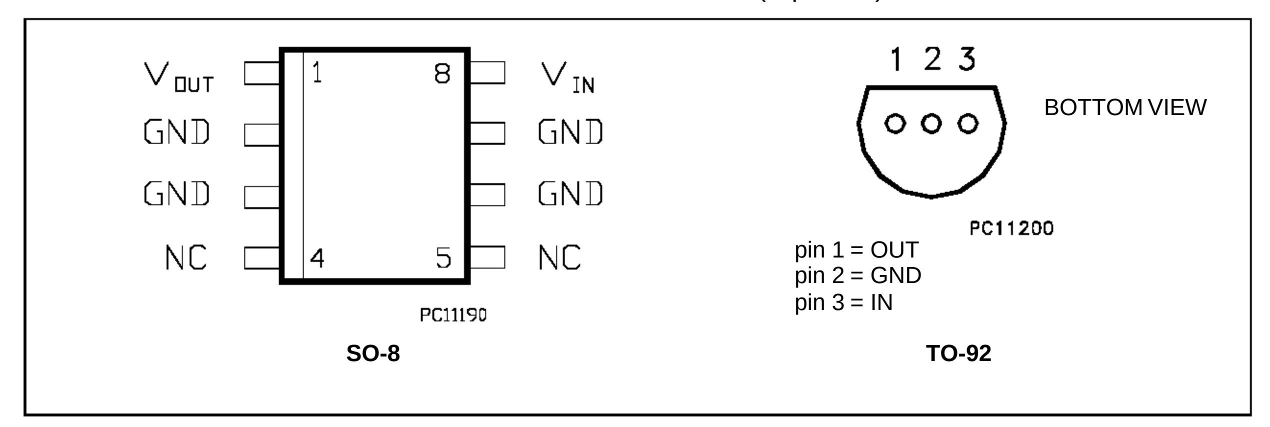
Symbol	Parameter		Value	Unit
V_i	DC Input Voltage	V_o = 5 V to 9 V	30	V
		V_o = 12 V to 15 V	35	V
		V_o = 18 V to 24 V	40	V
I_o	Output Current		100	mA
P_{tot}	Power Dissipation		Internally limited (*)	
T_{stg}	Storage Temperature Range		- 40 to 150	^oC
T_{op}	Operating Junction Temperature Range	For L78L00C, L78L00AC For L78L00AB	0 to 125 - 40 to 125	^oC ^oC

(*) Our SO-8 package used for Voltage Regulators is modified internally to have pins 2, 3, 6 and 7 electrically commoned to the die attach flag. This particular frame decreases the total thermal resistance of the package and increases its ability to dissipate power when an appropriate area of copper on the printed circuit board is available for heatsinking. The external dimensions are the same as for the standard SO-8

TEST CIRCUITS



CONNECTION DIAGRAM AND ORDERING NUMBERS (top view)



ORDERING NUMBERS

Type	SO-8	TO-92	Output Voltage
L78L05C	L78L05CD	L78L05CZ	5 V
L78L05AC	L78L05ACD	L78L05ACZ	5 V
L78L05AB	L78L05ABD	L78L05ABZ	5 V
L78L06C	L78L06CD	L78L06CZ	6 V
L78L06AC	L78L06ACD	L78L06ACZ	6 V
L78L06AB	L78L06ABD	L78L06ABZ	6 V
L78L08C	L78L08CD	L78L08CZ	8 V
L78L08AC	L78L08ACD	L78L08ACZ	8 V
L78L08AB	L78L08ABD	L78L08ABZ	8 V
L78L09C	L78L09CD	L78L09CZ	9 V
L78L09AC	L78L09ACD	L78L09ACZ	9 V
L78L09AB	L78L09ABD	L78L09ABZ	9 V
L78L12C	L78L12CD	L78L12CZ	12 V
L78L12AC	L78L12ACD	L78L12ACZ	12 V
L78L12AB	L78L12ABD	L78L12ABZ	12 V
L78L15C	L78L15CD	L78L15CZ	15 V
L78L15AC	L78L15ACD	L78L15ACZ	15 V
L78L15AB	L78L15ABD	L78L15ABZ	15 V
L78L18C	L78L18CD	L78L18CZ	18 V
L78L18AC	L78L18ACD	L78L18ACZ	18 V
L78L18AB	L78L18ABD	L78L18ABZ	18 V
L78L24C	L78L24CD	L78L24CZ	24 V
L78L24AC	L78L24ACD	L78L24ACZ	24 V
L78L24AB	L78L24ABD	L78L24ABZ	24 V

ELECTRICAL CHARACTERISTICS FOR L78L05 (refer to the test circuits, T_j = 0 to 125 °C, V_i = 10V, I_o = 40 mA, C_i = 0.33 µF, C_o = 0.1 µF unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	4.6	5	5.4	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 7 to 20 V I_o = 1 to 70 mA V_i = 10 V	4.5 4.5		5.5 5.5	V V
ΔV_o	Line Regulation	V_i = 7 to 20 V T_j = 25 °C V_i = 8 to 20 V T_j = 25 °C			200 150	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 °C I_o = 1 to 40 mA T_j = 25 °C			60 30	mV mV
I_d	Quiescent Current	T_j = 25 °C T_j = 125 °C			6 5.5	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.2	mA
ΔI_d	Quiescent Current Change	V_i = 8 to 20 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 °C		40		µV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 °C V_i = 8 to 18 V	40	49		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L06 (refer to the test circuits, T_j = 0 to 125 °C, V_i = 12V, I_o = 40 mA, C_i = 0.33 µF, C_o = 0.1 µF unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	5.52	6	6.48	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 8.5 to 20 V I_o = 1 to 70 mA V_i = 12 V	5.4 5.4		6.6 6.6	V V
ΔV_o	Line Regulation	V_i = 8.5 to 20 V T_j = 25 °C V_i = 9 to 20 V T_j = 25 °C			200 150	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 °C I_o = 1 to 40 mA T_j = 25 °C			60 30	mV mV
I_d	Quiescent Current	T_j = 25 °C T_j = 125 °C			6 5.5	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.2	mA
ΔI_d	Quiescent Current Change	V_i = 8 to 20 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 °C		50		µV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 °C V_i = 9 to 20 V	38	46		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L08 (refer to the test circuits, T_j = 0 to 125 ^oC, V_i = 14V, I_o = 40 mA, C_i = 0.33 μF, C_o = 0.1 μF unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 ^oC	7.36	8	8.64	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 10.5 to 23 V I_o = 1 to 70 mA V_i = 14 V	7.2 7.2		8.8 8.8	V V
ΔV_o	Line Regulation	V_i = 10.5 to 23 V T_j = 25 ^oC V_i = 11 to 23 V T_j = 25 ^oC			200 150	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 ^oC I_o = 1 to 40 mA T_j = 25 ^oC			80 40	mV mV
I_d	Quiescent Current	T_j = 25 ^oC T_j = 125 ^oC			6 5.5	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.2	mA
ΔI_d	Quiescent Current Change	V_i = 11 to 23 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 ^oC		60		μV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 ^oC V_i = 12 to 23 V	36	45		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L09 (refer to the test circuits, T_j = 0 to 125 ^oC, V_i = 15V, I_o = 40 mA, C_i = 0.33 μF, C_o = 0.1 μF unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 ^oC	8.28	9	9.72	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 11.5 to 23 V I_o = 1 to 70 mA V_i = 15 V	8.1 8.1		9.9 9.9	V V
ΔV_o	Line Regulation	V_i = 11.5 to 23 V T_j = 25 ^oC V_i = 12 to 23 V T_j = 25 ^oC			250 200	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 ^oC I_o = 1 to 40 mA T_j = 25 ^oC			80 40	mV mV
I_d	Quiescent Current	T_j = 25 ^oC T_j = 125 ^oC			6 5.5	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.2	mA
ΔI_d	Quiescent Current Change	V_i = 12 to 23 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 ^oC		70		μV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 ^oC V_i = 12 to 23 V	36	44		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L12 (refer to the test circuits, T_j = 0 to 125 ^oC, V_i = 19V, I_o = 40 mA, C_i = 0.33 µF, C_o = 0.1 µF unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 ^oC	11.1	12	12.9	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 14.5 to 27 V I_o = 1 to 70 mA V_i = 19 V	10.8 10.8		13.2 13.2	V V
ΔV_o	Line Regulation	V_i = 14.5 to 27 V T_j = 25 ^oC V_i = 16 to 27 V T_j = 25 ^oC			250 200	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 ^oC I_o = 1 to 40 mA T_j = 25 ^oC			100 50	mV mV
I_d	Quiescent Current	T_j = 25 ^oC T_j = 125 ^oC			6.5 6	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.2	mA
ΔI_d	Quiescent Current Change	V_i = 16 to 27 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 ^oC		80		µV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 ^oC V_i = 15 to 25 V	36	42		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L15 (refer to the test circuits, T_j = 0 to 125 ^oC, V_i = 23V, I_o = 40 mA, C_i = 0.33 µF, C_o = 0.1 µF unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 ^oC	13.8	15	16.2	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 17.5 to 30 V I_o = 1 to 70 mA V_i = 23 V	13.5 13.5		16.5 16.5	V V
ΔV_o	Line Regulation	V_i = 17.5 to 30 V T_j = 25 ^oC V_i = 20 to 30 V T_j = 25 ^oC			300 250	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 ^oC I_o = 1 to 40 mA T_j = 25 ^oC			150 75	mV mV
I_d	Quiescent Current	T_j = 25 ^oC T_j = 125 ^oC			6.5 6	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.2	mA
ΔI_d	Quiescent Current Change	V_i = 20 to 30 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 ^oC		90		µV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 ^oC V_i = 18.5 to 28.5 V	33	39		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L18 (refer to the test circuits, T_j = 0 to 125 ^oC, V_i = 27V, I_o = 40 mA, C_i = 0.33 µF, C_o = 0.1 µF unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 ^oC	16.6	18	19.4	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 22 to 33 V I_o = 1 to 70 mA V_i = 27 V	16.2 16.2		19.8 19.8	V V
ΔV_o	Line Regulation	V_i = 22 to 33 V T_j = 25 ^oC V_i = 22 to 33 V T_j = 25 ^oC			320 270	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 ^oC I_o = 1 to 40 mA T_j = 25 ^oC			170 85	mV mV
I_d	Quiescent Current	T_j = 25 ^oC T_j = 125 ^oC			6.5 6	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.2	mA
ΔI_d	Quiescent Current Change	V_i = 23 to 33 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 ^oC		120		µV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 ^oC V_i = 23 to 33 V	32	38		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L24 (refer to the test circuits, T_j = 0 to 125 ^oC, V_i = 33V, I_o = 40 mA, C_i = 0.33 µF, C_o = 0.1 µF unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 ^oC	22.1	24	25.9	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 27 to 38 V I_o = 1 to 70 mA V_i = 33 V	21.6 21.6		26.4 26.4	V V
ΔV_o	Line Regulation	V_i = 27 to 38 V T_j = 25 ^oC V_i = 28 to 38 V T_j = 25 ^oC			350 300	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 ^oC I_o = 1 to 40 mA T_j = 25 ^oC			200 100	mV mV
I_d	Quiescent Current	T_j = 25 ^oC T_j = 125 ^oC			6.5 6	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.2	mA
ΔI_d	Quiescent Current Change	V_i = 28 to 38 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 ^oC		200		µV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 ^oC V_i = 29 to 35 V	30	37		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L05AB AND L78L05AC

(refer to the test circuits, V_i = 10V, I_o = 40 mA, C_i = 0.33 µF, C_o = 0.1 µF,
T_j = 0 to 125 °C for L78L05AC, T_j = -40 to 125 °C for L78L05AB, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	4.8	5	5.2	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 7 to 20 V I_o = 1 to 70 mA V_i = 10 V	4.75 4.75		5.25 5.25	V V
ΔV_o	Line Regulation	V_i = 7 to 20 V T_j = 25 °C V_i = 8 to 20 V T_j = 25 °C			150 100	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 °C I_o = 1 to 40 mA T_j = 25 °C			60 30	mV mV
I_d	Quiescent Current	T_j = 25 °C T_j = 125 °C			6 5.5	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.1	mA
ΔI_d	Quiescent Current Change	V_i = 8 to 20 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 °C		40		µV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 °C V_i = 8 to 18 V	41	49		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L06AB AND L78L06AC

(refer to the test circuits, V_i = 12V, I_o = 40 mA, C_i = 0.33 µF, C_o = 0.1 µF,
T_j = 0 to 125 °C for L78L06AC, T_j = -40 to 125 °C for L78L06AB, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	5.76	6	6.24	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 8.5 to 20 V I_o = 1 to 70 mA V_i = 12 V	5.7 5.7		6.3 6.3	V V
ΔV_o	Line Regulation	V_i = 8.5 to 20 V T_j = 25 °C V_i = 9 to 20 V T_j = 25 °C			150 100	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 °C I_o = 1 to 40 mA T_j = 25 °C			60 30	mV mV
I_d	Quiescent Current	T_j = 25 °C T_j = 125 °C			6 5.5	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.1	mA
ΔI_d	Quiescent Current Change	V_i = 9 to 20 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 °C		50		µV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 °C V_i = 9 to 20 V	39	46		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L08AB AND L78L08AC

(refer to the test circuits, V_i = 14V, I_o = 40 mA, C_i = 0.33 μF, C_o = 0.1 μF, T_j = 0 to 125 °C for L78L08AC, T_j = -40 to 125 °C for L78L08AB, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	7.68	8	8.32	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 10.5 to 23 V I_o = 1 to 70 mA V_i = 14 V	7.6 7.6		8.4 8.4	V V
ΔV_o	Line Regulation	V_i = 10.5 to 23 V T_j = 25 °C V_i = 11 to 23 V T_j = 25 °C			175 125	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 °C I_o = 1 to 40 mA T_j = 25 °C			80 40	mV mV
I_d	Quiescent Current	T_j = 25 °C T_j = 125 °C			6 5.5	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.1	mA
ΔI_d	Quiescent Current Change	V_i = 11 to 23 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 °C		60		μV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 °C V_i = 12 to 23 V	37	45		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L09AB AND L78L09AC

(refer to the test circuits, V_i = 15V, I_o = 40 mA, C_i = 0.33 μF, C_o = 0.1 μF, T_j = 0 to 125 °C for L78L09AC, T_j = -40 to 125 °C for L78L09AB, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	8.64	9	9.36	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 11.5 to 23 V I_o = 1 to 70 mA V_i = 15 V	8.55 8.55		9.45 9.45	V V
ΔV_o	Line Regulation	V_i = 11.5 to 23 V T_j = 25 °C V_i = 12 to 23 V T_j = 25 °C			225 150	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 °C I_o = 1 to 40 mA T_j = 25 °C			80 40	mV mV
I_d	Quiescent Current	T_j = 25 °C T_j = 125 °C			6 5.5	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.1	mA
ΔI_d	Quiescent Current Change	V_i = 12 to 23 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 °C		70		μV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 °C V_i = 12 to 23 V	37	44		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L12AB AND L78L12AC
(refer to the test circuits, V_i = 19V, I_o = 40 mA, C_i = 0.33 µF, C_o = 0.1 µF,
T_j = 0 to 125 °C for L78L12AC, T_j = -40 to 125 °C for L78L12AB, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	11.5	12	12.5	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 14.5 to 27 V I_o = 1 to 70 mA V_i = 19 V	11.4 11.4		12.6 12.6	V V
ΔV_o	Line Regulation	V_i = 14.5 to 27 V T_j = 25 °C V_i = 16 to 27 V T_j = 25 °C			250 200	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 °C I_o = 1 to 40 mA T_j = 25 °C			100 50	mV mV
I_d	Quiescent Current	T_j = 25 °C T_j = 125 °C			6.5 6	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.1	mA
ΔI_d	Quiescent Current Change	V_i = 16 to 27 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 °C		80		µV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 °C V_i = 15 to 25 V	37	42		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L15AB AND L78L15AC
(refer to the test circuits, V_i = 23V, I_o = 40 mA, C_i = 0.33 µF, C_o = 0.1 µF,
T_j = 0 to 125 °C for L78L15AC, T_j = -40 to 125 °C for L78L15AB, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	14.4	15	15.6	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 17.5 to 30 V I_o = 1 to 70 mA V_i = 23 V	14.25 14.25		15.75 15.75	V V
ΔV_o	Line Regulation	V_i = 17.5 to 30 V T_j = 25 °C V_i = 20 to 30 V T_j = 25 °C			300 250	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 °C I_o = 1 to 40 mA T_j = 25 °C			150 75	mV mV
I_d	Quiescent Current	T_j = 25 °C T_j = 125 °C			6.5 6	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.1	mA
ΔI_d	Quiescent Current Change	V_i = 20 to 30 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 °C		90		µV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 °C V_i = 18.5 to 28.5 V	34	39		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L18AB AND L78L18AC
(refer to the test circuits, V_i = 27V, I_o = 40 mA, C_i = 0.33 μF, C_o = 0.1 μF,
T_j = 0 to 125 °C for L78L18AC, T_j = -40 to 125 °C for L78L18AB, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	17.3	18	18.7	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 22 to 33 V I_o = 1 to 70 mA V_i = 27 V	17.1 17.1		18.9 18.9	V V
ΔV_o	Line Regulation	V_i = 22 to 33 V T_j = 25 °C V_i = 22 to 33 V T_j = 25 °C			320 270	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 °C I_o = 1 to 40 mA T_j = 25 °C			170 85	mV mV
I_d	Quiescent Current	T_j = 25 °C T_j = 125 °C			6.5 6	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.1	mA
ΔI_d	Quiescent Current Change	V_i = 23 to 33 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 °C		120		μV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 °C V_i = 23 to 33 V	33	38		dB
V_d	Dropout Voltage			1.7		V

ELECTRICAL CHARACTERISTICS FOR L78L24AB AND L78L24AC
(refer to the test circuits, V_i = 33V, I_o = 40 mA, C_i = 0.33 μF, C_o = 0.1 μF,
T_j = 0 to 125 °C for L78L24AC, T_j = -40 to 125 °C for L78L24AB, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_o	Output Voltage	T_j = 25 °C	23	24	25	V
V_o	Output Voltage	I_o = 1 to 40 mA V_i = 27 to 38 V I_o = 1 to 70 mA V_i = 33 V	22.8 22.8		25.2 25.2	V V
ΔV_o	Line Regulation	V_i = 27 to 38 V T_j = 25 °C V_i = 28 to 38 V T_j = 25 °C			350 300	mV mV
ΔV_o	Load Regulation	I_o = 1 to 100 mA T_j = 25 °C I_o = 1 to 40 mA T_j = 25 °C			200 100	mV mV
I_d	Quiescent Current	T_j = 25 °C T_j = 125 °C			6.5 6	mA mA
ΔI_d	Quiescent Current Change	I_o = 1 to 40 mA			0.1	mA
ΔI_d	Quiescent Current Change	V_i = 28 to 38 V			1.5	mA
eN	Output Noise Voltage	B = 10Hz to 100KHz T_j = 25 °C		200		μV
SVR	Supply Voltage Rejection	I_o = 40 mA f = 120 Hz T_j = 25 °C V_i = 29 to 35 V	31	37		dB
V_d	Dropout Voltage			1.7		V

Figure 1: L78L05/12 Output Voltage vs Ambient Temperature

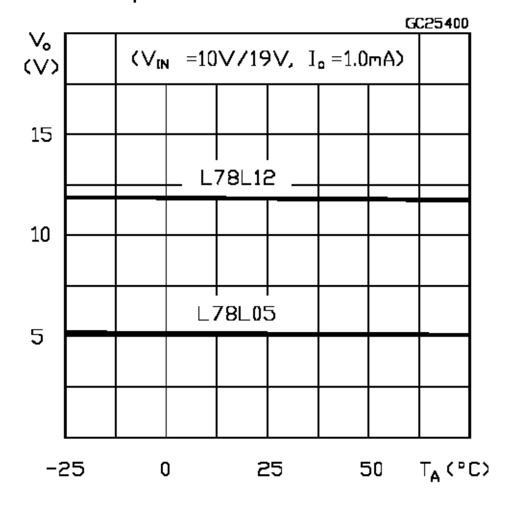


Figure 2 : L78L05/12/24 Load Characteristics.

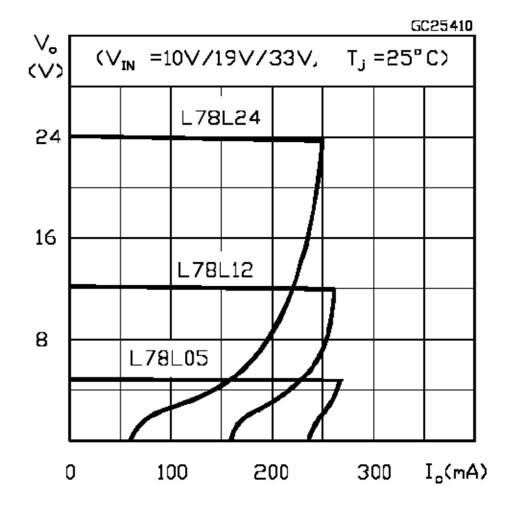


Figure 3 : L78L05/12/24 Thermal Shutdown.

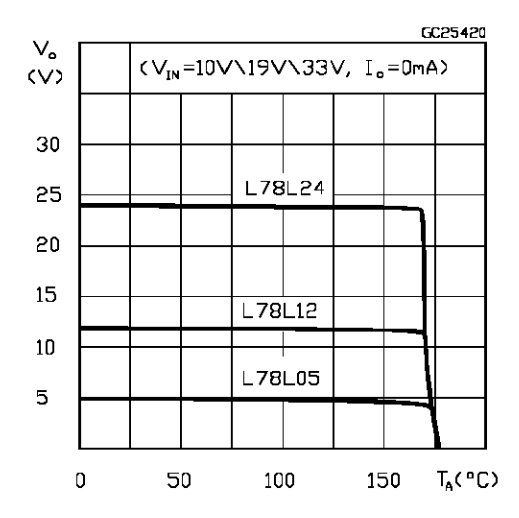


Figure 4 : L78L05/12 Quiescent Current vs Output Current

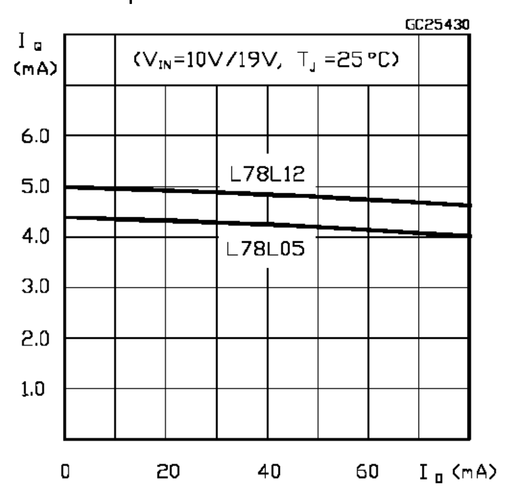


Figure 5 : L78L05 Quiescent Current vs Input Voltage.

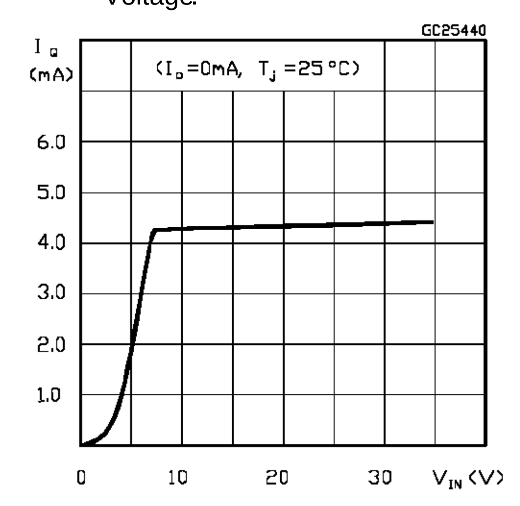


Figure 6 : L78L05/12/24 Output Characteristics.

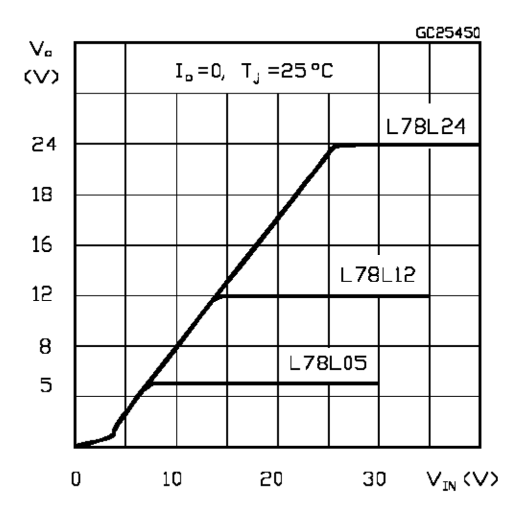


Figure 7 : L78L05/12/24 Ripple Rejection.

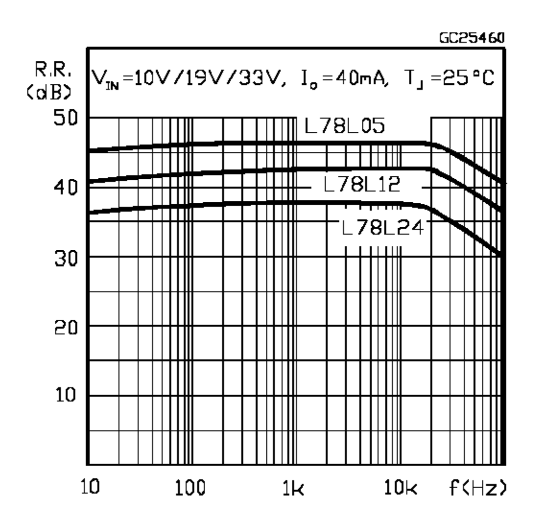


Figure 8 : L78L05 Dropout Characteristics.

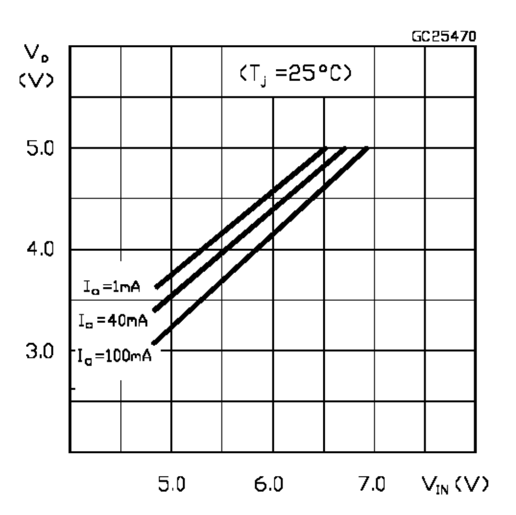
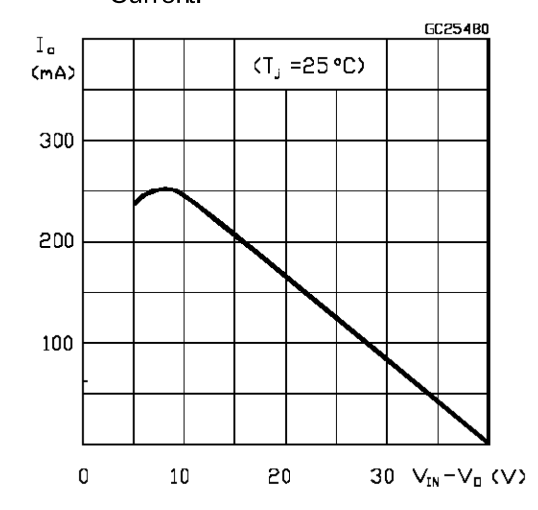


Figure 9 : L78L00 Series Short Circuit Output Current.



TYPICAL APPLICATIONS:

Figure 10: High Output Current Short Circuit Protected

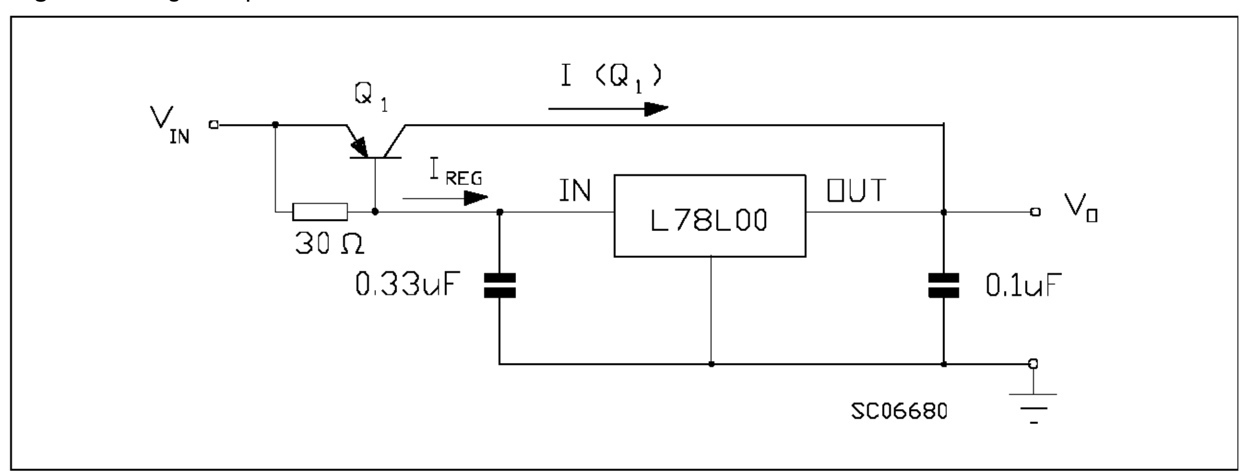


Figure 11 : Output Boost Circuit.

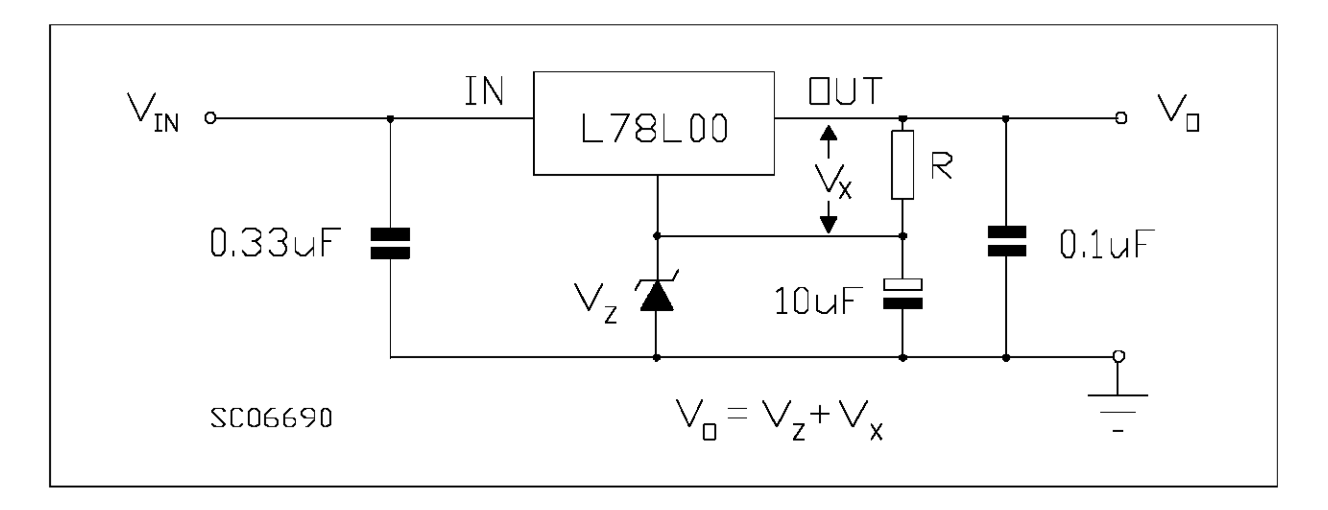


Figure 12 : Current Regulator.

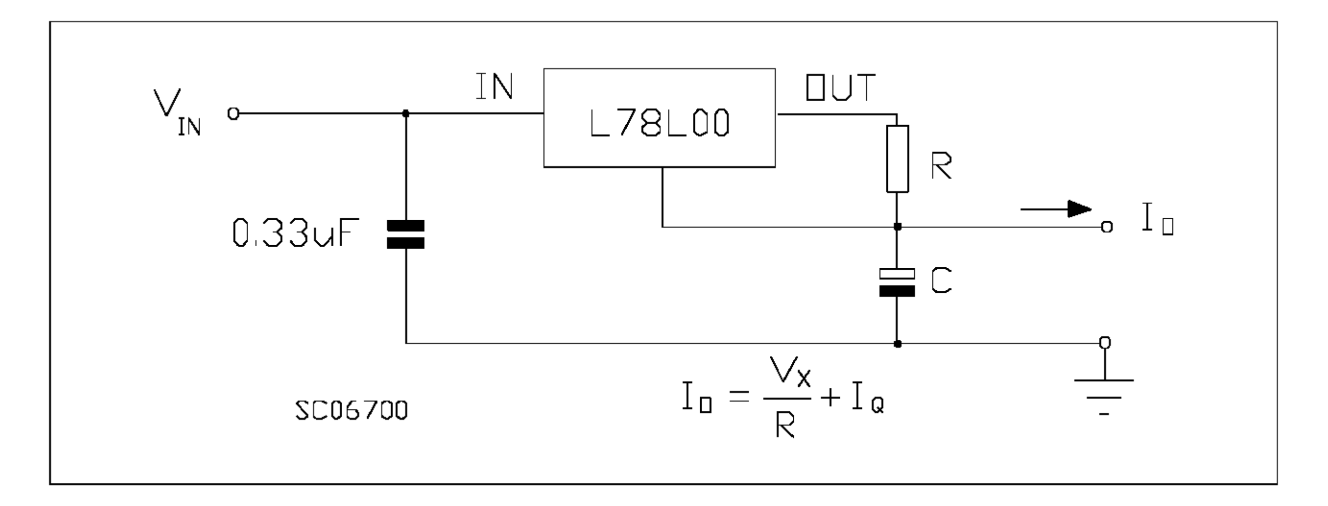
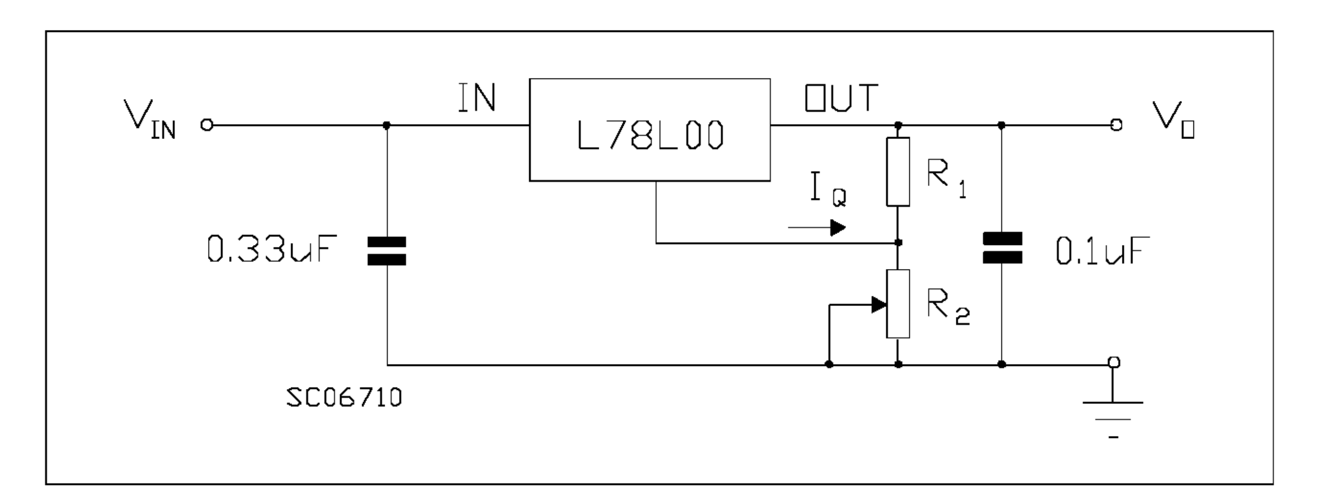
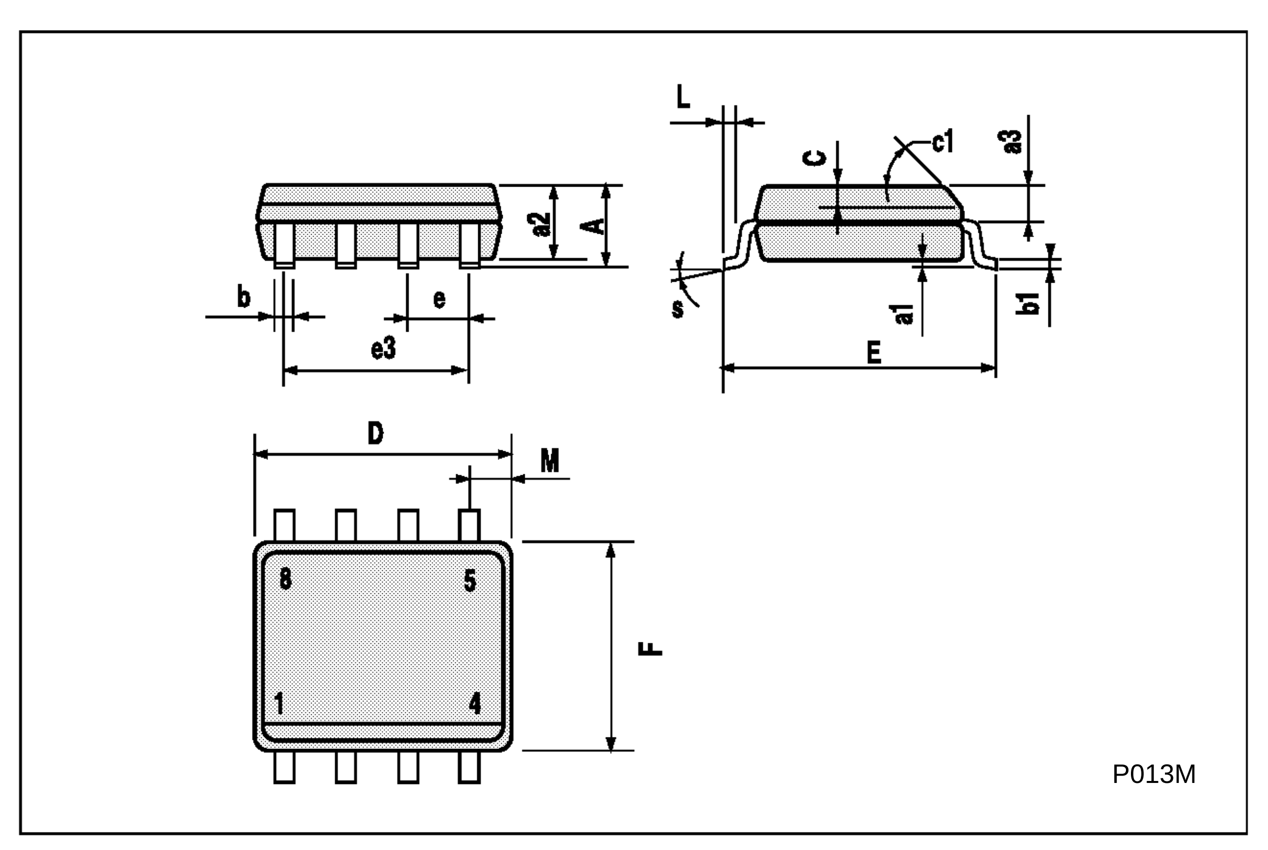


Figure 13: Adjustable Output Regulator



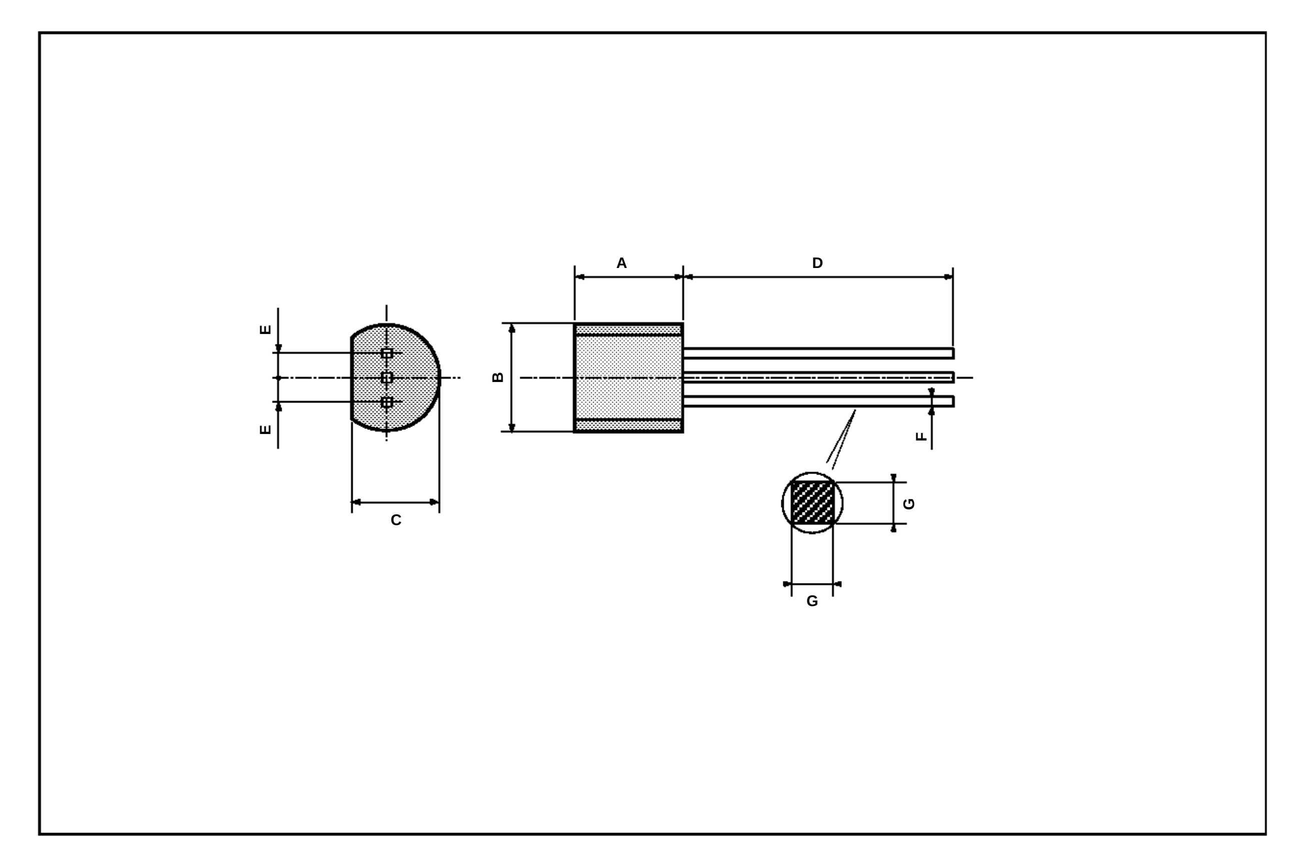
SO8 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.75			0.068
a1	0.1		0.25	0.003		0.009
a2			1.65			0.064
a3	0.65		0.85	0.025		0.033
b	0.35		0.48	0.013		0.018
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.019
c1	45° (typ.)					
D	4.8		5.0	0.188		0.196
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.14		0.157
L	0.4		1.27	0.015		0.050
M			0.6			0.023
S	8° (max.)					



TO-92 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.58		5.33	0.180		0.210
B	4.45		5.2	0.175		0.204
C	3.2		4.2	0.126		0.165
D	12.7			0.500		
E		1.27			0.050	
F	0.4		0.51	0.016		0.020
G	0.35			0.14		




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